

WHAT IS CLAIMED IS:

- [c001] 1. An organic liquid evaporation system comprising:
- a) a housing having at least one inlet and at least one outlet;
 - b) at least a first evaporator plate radially extending from a sidewall of said housing;
 - c) at least a second evaporator plate radially extending from said sidewall of said housing, wherein said housing, said first evaporator plate and said second evaporator plate define a serpentine flow path within said housing; and
 - d) a heating source in thermal communication with said first evaporator plate and said second evaporator plate, wherein said heating source provides heat to said first and second evaporator plates to evaporate organic liquid introduced within said inlet to produce a vapor through said outlet.
- [c002] 2. The organic liquid evaporation system according to Claim 1, wherein said at least a first evaporator plate and at least a second evaporator plate are heated using a heating and cooling component comprising at least one of a heating fluid jacket, an electrical heating resistance coil and combinations thereof.
- [c003] 3. The organic liquid evaporation system according to Claim 1, wherein said housing has a plurality of inlets.
- [c004] 4. The organic liquid evaporation system according to Claim 3, wherein said plurality of inlets are connected to organic liquid supply cylinders via upstream pressure regulators.
- [c005] 5. The organic liquid evaporation system according to Claim 1, wherein said housing has a plurality of outlets.

[c006] 6. The organic liquid evaporation system according to Claim 5, wherein said plurality of outlets connect to a burner supply line via downstream pressure regulators.

[c007] 7. The organic liquid evaporation system according to Claim 1, wherein the internal pressure of said housing is maintained at constant pressure.

[c008] 8. The organic liquid evaporation system according to Claim 1, wherein said housing further comprises a carrier gas inlet for delivery of a carrier gas into said housing.

[c009] 9. The organic liquid evaporation system according to Claim 1, wherein said organic liquid evaporation system further comprises a droplet generating device including a fogger, spray nozzle, ultrasonic device and combinations thereof.

[c010] 10. An organic liquid evaporation system comprising:

a) a substantially vertical oriented housing having at least one inlet and at least one outlet;

b) at least a first substantially horizontally oriented evaporator plate radially extending from a sidewall of said housing;

c) at least a second substantially horizontally oriented evaporator plate radially extending from said sidewall of said housing and vertically offset from said first evaporator plate, wherein said housing, said first evaporator plate and said second evaporator plate define a serpentine flow path within said housing; and

d) a heating source in thermal communication with said first evaporator plate and said second evaporator plate, wherein said heating source provides heat to said first and second evaporator plates to evaporate organic liquid introduced within said inlet to produce a vapor through said outlet.

[c011] 11. The organic liquid evaporation system according to Claim 10, wherein said at least a first substantially horizontally oriented evaporator plate and at least a second substantially horizontally oriented evaporator plate are heated using a heating and cooling component comprising at least one of a heating fluid jacket, an electrical heating resistance coil and combinations thereof.

[c012] 12. The organic liquid evaporation system according to Claim 10, wherein said housing has a plurality of inlets.

[c013] 13. The organic liquid evaporation system according to Claim 12, wherein said plurality of inlets are connected to organic liquid supply cylinders via upstream pressure regulators.

[c014] 14. The organic liquid evaporation system according to Claim 10, wherein said housing has a plurality of outlets.

[c015] 15. The organic liquid evaporation system according to Claim 14, wherein said plurality of outlets connect to a burner supply line via downstream pressure regulators.

[c016] 16. The organic liquid evaporation system according to Claim 10, wherein the internal pressure of said housing is maintained at constant pressure.

[c017] 17. The organic liquid evaporation system according to Claim 10, wherein said housing further comprises a carrier gas inlet for delivery of a carrier gas into said housing.

[c018] 18. The organic liquid evaporation system according to Claim 10, wherein said organic liquid evaporation system further comprises a droplet generating device including a fogger, spray nozzle, ultrasonic device and combinations thereof.

[c019] 19. An organic liquid evaporation system comprising:

- a) a housing having at least one inlet and at least one outlet;
- b) at least a first perforated evaporator plate circumferentially disposed within said housing;
- c) at least a second perforated evaporator plate circumferentially disposed within said housing;
- d) an atomizer for atomizing organic liquid introduced within said inlet into droplets; and
- e) a heating source in thermal communication with said first perforated evaporator plate and said second perforated evaporator plate, wherein said heating source provides heat to said first and second perforated evaporator plates to evaporate introduced droplets through said perforated plates to produce a vapor through said outlet.

[c020] 20. The organic liquid evaporation system according to Claim 19, wherein said at least a first perforated evaporator plate and at least a second perforated evaporator plate are heated using a heating and cooling component comprising at least one of a heating fluid jacket, an electrical heating resistance coil and combinations thereof.

[c021] 21. The organic liquid evaporation system according to Claim 19, wherein said housing has a plurality of inlets.

[c022] 22. The organic liquid evaporation system according to Claim 21, wherein said plurality of inlets are connected to organic liquid supply cylinders via upstream pressure regulators.

[c023] 23. The organic liquid evaporation system according to Claim 19, wherein said housing has a plurality of outlets.

[c024] 24. The organic liquid evaporation system according to Claim 23, wherein said plurality of outlets connect to a burner supply line via downstream pressure regulators.

[c025] 25. The organic liquid evaporation system according to Claim 19, wherein the internal pressure of said housing is maintained at constant pressure.

[c026] 26. The organic liquid evaporation system according to Claim 19, wherein said housing further comprises a carrier gas inlet for delivery of a carrier gas into said housing.

[c027] 27. The organic liquid evaporation system according to Claim 19, wherein said atomizer further comprises a droplet generating device including a fogger, spray nozzle, ultrasonic device and combinations thereof.

[c028] 28. An organic liquid evaporation system comprising:

a) a substantially vertical oriented housing having at least one inlet and at least one outlet;

b) at least a first substantially horizontally oriented perforated evaporator plate circumferentially disposed within said housing;

c) at least a second substantially horizontally oriented perforated evaporator plate circumferentially disposed within said housing;

d) an atomizer for atomizing organic liquid introduced within said inlet into droplets; and

e) a heating source in thermal communication with said first perforated evaporator plate and said second perforated evaporator plate, wherein said heating source provides heat to said first and second perforated evaporator plates to

evaporate introduced droplets through said perforated plates to produce a vapor through said outlet.

[c029] 29. The organic liquid evaporation system according to Claim 28, wherein said at least a first substantially horizontally oriented perforated evaporator plate and at least a second substantially horizontally oriented perforated evaporator plate are heated using a heating and cooling component comprising at least one of a heating fluid jacket, an electrical heating resistance coil and combinations thereof.

[c030] 30. The organic liquid evaporation system according to Claim 28, wherein said housing has a plurality of inlets.

[c031] 31. The organic liquid evaporation system according to Claim 30, wherein said plurality of inlets are connected to organic liquid supply cylinders via upstream pressure regulators.

[c032] 32. The organic liquid evaporation system according to Claim 28, wherein said housing has a plurality of outlets.

[c033] 33. The organic liquid evaporation system according to Claim 32, wherein said plurality of outlets connect to a burner supply line via downstream pressure regulators.

[c034] 34. The organic liquid evaporation system according to Claim 28, wherein the internal pressure of said housing is maintained at constant pressure.

[c035] 35. The organic liquid evaporation system according to Claim 28, wherein said housing further comprises a carrier gas inlet for delivery of a carrier gas into said housing.

[c036] 36. The organic liquid evaporation system according to Claim 28, wherein said atomizer further comprises a droplet generating device including a fogger, spray nozzle, ultrasonic device and combinations thereof.

[c037] 37. A method for making organic vapor comprising the steps of:

- a) providing a housing having at least one inlet and at least one outlet;
- b) providing at least a first evaporator plate radially extending from a sidewall of said housing;
- c) providing at least a second evaporator plate radially extending from a sidewall of said housing, wherein said housing, said first evaporator plate and said second evaporator plate define a serpentine flow path within said housing;
- d) introducing at least one organic liquid through said at least one inlet; and
- e) providing a heating source in thermal communication with said first evaporator plate and said second evaporator plate, wherein said heating source provides heat to said first and second evaporator plates to evaporate said organic liquid introduced within said inlet to provide a vapor through said outlet.

[c038] 38. The method according to Claim 37, wherein said at least a first evaporator plate and at least a second evaporator plate are heated using a heating and cooling component comprising at least one of a heating fluid jacket, an electrical heating resistance coil and combinations thereof.

[c039] 39. The method according to Claim 37, wherein said housing has a plurality of inlets.

[c040] 40. The method according to Claim 39, wherein said plurality of inlets are connected to organic liquid supply cylinders via upstream pressure regulators.

[c041] 41. The method according to Claim 37, wherein said housing has a plurality of outlets.

[c042] 42. The method according to Claim 41, wherein said plurality of outlets connect to a burner supply line via downstream pressure regulators.

[c043] 43. The method according to Claim 37, wherein the internal pressure of said housing is maintained at constant pressure.

[c044] 44. The method according to Claim 37, wherein said housing further comprises a carrier gas inlet for delivery of a carrier gas into said housing.

[c045] 45. The method according to Claim 37, wherein said organic liquid is introduced from said at least one inlet to at least one atomizer for atomizing said organic liquid into droplets.

[c046] 46. The method according to Claim 45 wherein said at least one atomizer further comprises a droplet generating device including a fogger, spray nozzle, ultrasonic device and combinations thereof.

[c047] 47. The method according to Claim 37, wherein said vapor is fed to a burner and ignited to deposit inorganic soot on a mandrel as mandrel cake.

[c048] 48. The method according to Claim 47, wherein said inorganic soot comprises at least one inorganic oxide selected from the group consisting of glass, alumina, silica, germania, titania, zirconia, boria, magnesia, calcia, chromia, their substituents, combinations, mixtures, stoichiometric modifications, composites, alloys and functionally graded combinations thereof.

[c049] 49. The method according to Claim 47, wherein said mandrel cake is subjected to a processing that comprises at least one of compaction, heat treatment, sintering, densification, and combinations thereof.

[c050] 50. The method according to Claim 49, wherein said processing yields a material comprising at least one of an optical mirror, an opaque material, a translucent

material, a transparent material, material with graded optical properties, and combinations thereof.

[c051] 51. The method according to Claim 50, wherein said material with graded optical properties further comprises a material with graded refractive index.